Minutes Chemistry Innovation Council

September 22, 2006

Chair: Robert Lemieux **Co-Chair:**
Dr. Jan Oudenes

Attending: Jan Oudenes, Bob Lemieux, Greg Lessard, Walter Szarek, John Carran, Cory Johnston, Din Lal, Walter Chan, Dale Cameron, Barry Robins, John Molloy, Dan Wayner, Lorenzo Ferrari, Bonnie Lampe, Hugh Horton, Philip Jessop, Patty McHenry, Hazel Metcalfe and Diane Sullivan.

Regrets: Burton Branch, Bruce Chernoff, Paul Matteau, Heinz Plaumann, Daphne Ripley, David Thomas, Dinesh Vyas, Markus Wicki, Rick Friesen, Brian Robins, Wayne Schnarr, Richard Devereaux, Randy Gossen, Ken Reucassel and Shirley Tilghman

MORNING SESSION:

Jan Oudenes provided welcoming remarks and introductions.

New Members: Lorenzo Ferrari, Head of Product Research Group at Lanxess Inc, replaces Andrew Carr. Rick Friesen, Head of Medicinal Chemistry at Merck-Frosst Canada & Co., replaces Bob Young. Walter Szarek, Emeritus Professor of Chemistry, Queen's. Dan Wayner, Director General of the Steacie Institute for Molecular Sciences, National Research Council of Canada.

Bob Lemieux welcomed the participants and reviewed the activities of the Chemistry Department.

Rick Boswell discussed the issue of space planning. Discussed the historical planning process that went into Chernoff Hall and some of the factors that are contributing to the current space challenges. He also discussed initiatives to help alleviate the more pressing concerns as well as long range plans to permanently address space issues.

Graduate Curriculum Development

Summary of Group discussions:

1) Dale Cameron – Possible Drug Discovery Course

- 6 week program
- 3hrs per week
- 1 ½ - 2 hrs instructional time with team work
- 1 hr presentation from each team (using QCIC members to mentor students and provide guidance and feedback.
- Weekly evaluations on path, decision, approach, quality and presentation.
- John Carran to be the instructor.
- Start date of spring 2007 anticipated.
- Course could be offered to 4th years and faculty of health sciences students

2) Jan Oudenes – Design of Experiment

- **Work place safety** training should be ongoing throughout a student's enrolment.
- Department requires a "culture change" concerning safety.
- Training should include videos with quizzes – Cory Johnston offered to bring in a specialist who would determine the best training for a chemistry department.
- Good safety training will be beneficial when graduates enter the work force.
- **Process Safety** is a separate discipline. Safety in project management builds a better student who is more effective at an earlier stage.
- Many external courses are currently available and include textbooks and videos. The department would need a dedicated staff member to run the course. This course would not be mandatory for all as certain chemistries would not require this type of training.
- Could create a course that would be used by many faculties and departments.

AFTERNOON SESSION

Chemistry Road Show Presentations

This road show was first delivered to the Deputy Minister of Research and Innovation last spring.

Dr. Stan Brown - Mechanistic studies of La3+ and Zn2+-catalyzed alcoholysis of neutral organophosphate esters: a new methodology for the decomposition of CW agents and OP pesticides.

Dr. Cathy Crudden – Better drugs through chemistry

Dr. Philip Jessop – Switchable solvents and surfactants

Dr. Richard Oleschuk – Micro fluidic Systems

Dr. Stephen Brown – Detection of Bacteria in Water Re: Walkerton Tragedy

QCIC Road Show

Presented by Jan Oudenes and developed by Heinz Plaumann

Slide show should be used by council members as a recruitment tool and a fundraising tool.

Jan Oudenes announced a $10,000 donation by Alphora Research to the undergraduate equipment fund and announced he would match the next $10,000 raised by council members.

Jan encouraged members to look into the summer internship program Alphora is involved with.

Bob Lemieux announced plans for several out of town alumni receptions with targeted audiences and the use of the Chemistry Road Show as a fundraising tool.

General discussion led to the suggestion of developing several road shows to target Alumni, student recruitment and as an introduction to what the QCIC does.

Bonnie Lampe from Gamble Technologies, a ’06 chemistry graduate spoke to the Council about her direct benefit of involvement with the Innovation Council. She attended the careers luncheon in 2005 and met Din Lal whom she now works for.

It was suggested that a “job fair” could be given yearly in conjunction with the careers luncheon to help students find direction and information.

Adjournment: 2:45 pm by Bob Lemieux.

APPENDIX

2006 Annual QCIC Meeting

Head's Report

R.P. Lemieux, Acting Head

Full-Time Regular Faculty (22)

Diane Beauchemin		Analytical Chemistry
Stan Brown	***Killam Fellow***	Mechanistic Organic and Bioorganic Chemistry
Stephen Brown		Environmental Analytical Chemistry
Natalie Cann		Computational/Theoretical Chemistry
Cathy Crudden		Organic Materials Chemistry and Catalysis
Simon Hesp		Polymer Engineering
Hugh Horton		Surface Chemistry
Gregory Jerkiewicz		Surface and Materials Electrochemistry
Philip Jessop	***CRC Tier 2***	Green Chemistry
Bob Lemieux		Organic Liquid Crystal Materials
Guojun Liu	***CRC Tier 1***	Polymer Materials
Peter Loock		Laser Spectroscopy
Donal Macartney		Supramolecular Inorganic Chemistry
Jean-Michel Nunzi	***CRC Tier 1***	Chiral Photonics (Chemistry/Physics)
Richard Oleschuk		Microfluidics
Anne Petitjean		Supramolecular and Biological Chemistry
Derek Pratt	***CRC Tier 2***	Bioorganic and Physical Organic Chemistry
Gary vanLoon		Environmental Chemistry
Suning Wang		Inorganic and Organometallic Materials
Ralph Whitney		Industrial Organic Chemistry
Gang Wu		Biophysical Chemistry/NMR Spectroscopy
David Zechel		Biological Chemistry

Research Active Emeritus Faculty

Mike Baird		Organometallic Chemistry
Erwin Buncel		Physical Organic Chemistry
Victor Snieckus	***Bader Chair Emeritus***	Organic Synthesis
Walter Szarek		Medicinal Chemistry

Faculty Renewal

1. **CRC Tier 1 in Computational/Theoretical Chemistry**: agreed to terms of employment. CRC application in progress.

2. **Junior Faculty in Computational/Theoretical Chemistry**: currently advertised, closing date of November 10, 2006.

3. **Junior Faculty in Analytical/Environmental Chemistry**: will seek authorization to advertise next fall.

4. **Bader Chair in Organic Chemistry**: will begin active search next year for possible appointment in 2009.

5. **NSERC Industrial Chair in Surface Catalysis**: **Peter McBreen (U. Laval)** Under-subscribed program at Queen's. Significant potential for partnerships with Crudden, Horton, Jerkiewicz, McLean (Physics). Need industrial partner in pharmaceutical or polymer area. ***QCIC is well positioned to help***.

Research Funding Profile

Research Grants

- 24 of 26 research active faculty hold NSERC Discovery Grants.
- Average NSERC DG in the department is $ **54.6 K/yr**. By comparison, the average NSERC DG awarded by GSC 24 over past four years (Inorganic/Organic): $ **54.5 K/yr**; by GSC 26 (Analytical/Physical): $ **43 K/yr**.
- Grants from other sources (over the past 12 months) include: U.S. Army Research Office, Xerox, Merck-Frosst, MMO, Ontario Ministry of Transportation, CIHR, Imperial Oil, PRO.

Equipment Grants

- 3 out of 6 NSERC RTI 1 grants funded for a total of $ **270 K**.

Undergrad Program

Update on curriculum revision

- CHEM 323, Biological Chemistry (Zechel)
- CHEM 413, Computational Chemistry (Cann)
- CHEM 414, Catalysis (Jessop/Petitjean)
- CHEM 425, Self-Assembly and Materials (Horton/Liu)
- Consolidation of 1st year General Chemistry: deletion of CHEM 112 and creation of four sections of CHEM 116 (use of wireless laptops in CHE 250 auditorium)

CSC Accreditation

- All undergrad programs accredited for another seven years.

Undergrad enrolment (4th year class)

- 2005-06: **32** BScH (SSP, MAJ, MED); **28** BScE (Eng. Chem.)
- 2006-07: **20** BScH (SSP, MAJ, MED); **36** BScE (Eng. Chem.)

Undergrad laboratory equipment

- Gift of $10,000 from Alphora Inc. for the purchase of fibre-optic UV-vis spectrometers (2), melting point apparatus (2) and magnetic stirrers (16).

4th Year research project presentations

- Invite QCIC members to participate in judging research presentations in early April. An award funded by M. Sullivan & Son, Ltd. is being established for the top BScH and BScE projects.

Summer undergraduate internships

- Alphora internships deemed successful; can we expand the program to other companies on QCIC ?

Graduate Program

Graduate curriculum

- Entire grad curriculum to be reviewed this year.

Graduate enrolment and recruiting

- Total of 98 graduate students as of September registration; 42 M.Sc; 56 Ph.D.
- 22 new graduate students enrolled this fall; expect this number to grow as new faculty develop their research programs. Goal of 120 grad students at steady-state.
- Minimum guaranteed stipend raised from $20 K/yr to $21 K/yr for September 2007; we are keeping up with main Ontario competitors (Western, Ottawa, McMaster), but would need to go up another $2-3 K/yr to gain an edge.
- In order to make this possible, we need to raise $$ to create graduate scholarships and/or Queen's Graduate Award supplements (vide infra).
- Possible role of QCIC in helping recruit grad students ?

Advancement

Major challenges ahead

- Maintenance of state-of-the-art instrumentation infrastructure (NMR, MS, X-ray).
- Retain high quality technical support for multi-user instrumentation.
- Maintain/enhance undergraduate laboratory equipment.
- Increase graduate student funding via new scholarships.
- Space (yes, space !)

Solutions through development

- Endowment for technical support of instrumentation infrastructure ($3-4M), perhaps via the creation of a 'Centre' and/or partnerships with cognate departments (Physics, Biochemistry).
- Endowments to generate graduate scholarships (e.g., $100 K endowment generates $4,500 grad scholarship.
- Endowment for undergraduate laboratory equipment.
- Seek major gift for a joint Chemistry/Physics building project to house an 'Institute for Materials Science'

Ramping up development efforts

- Creation of new ***Events and Development Coordinator*** (Diane Sullivan): main liason with Arts & Science Development team; coordination of QCIC activities; coordination of fundraising activities; maintainance and mining of alumni database; coordination of departmental events.
- Creation of a departmental ***Advancement Committee*** responsible for developing fundraising strategies and setting funding priorities.

  Membership: Bob Lemieux (Chair)
  Hugh Horton
  Suning Wang
  Derek Pratt
  Walter Szarek
  Rick Boswell
  Patty McHenry (Development Officer)
  Diane Sullivan (Secretary)